

Ordovician NEWS

ST JOHN'S '88



IUGS COMMISSION ON STRATIGRAPHY
SUBCOMMISSION ON ORDOVICIAN STRATIGRAPHY

No. 6 1988-89

INTERNATIONAL UNION OF GEOLOGICAL SCIENCES

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NOTES FOR CONTRIBUTORS

Correspondence, reviews (and lists) of recent publications, brief summaries of current research, notices of relevant local, national and international meetings, and additions, deletions or changes to list of Ordovician workers will be welcomed.

Contributions should be in English, typed single spaced (double space between paragraphs) on white paper - print area should not exceed 18.5 x 26 cm. Copy should be mailed flat (with cardboard protector), to Henry Williams, Department of Earth Sciences, Memorial University of Newfoundland, St. John's, Newfoundland, Canada A1B 3X5.

Barry Webby has acted as Editor of this issue and is responsible for statements unless otherwise stated. Please note that Henry Williams, whose major contributions to the successful running of two International Symposia on the Ordovician System are well known, has kindly consented to act as Editor of future issues.

ANNUAL REPORTS OF THE SUBCOMMISSION ON ORDOVICIAN STRATIGRAPHY FOR 1987 and 1988

A. 1987 (abridged version)

1. Ordovician Correlation Chart Series

The subcommittee is continuing in its efforts to arrange for a series of correlation charts of Ordovician strata in all major regions of the world. This aims to provide the essential data base for later global analysis of Ordovician events and chronostratigraphy. R. J. Ross Jr. continues as Editor of the Series.

The Ordovician chart and explanatory notes for South America was published in February 1987, as IUGS Publication No. 22. It was co-authored by F. G. Aceñolaza and B. Baldis (with the active participation of a further sixteen colleagues from different Latin American countries) and comprised a 64-page text, 4 figures and a 67-column correlation chart. Further sections of second Soviet Ordovician chart were submitted to the Editor; the regions of Taimyr, the North East and Far East of the USSR, and now the Altai-Sayan fold belt region (Sennikov, Petrunnina, Yolkin and Obut) have been received. Other charts in stages nearing completion are Central Europe, Norway and Sweden, North Africa and Greenland.

2. Ordovician Chronostratigraphy Working Groups

Professor C. R. Barnes (Chairman) has recently outlined the tasks of Ordovician Chronostratigraphy Working Groups and proposed a schedule leading to agreements and recommendations for approval of the Commission of Stratigraphy. Also, Roger Cooper and Barry Webby reported on the work of the Australasian Chronostratigraphy Working Group (see details previously published in ORDOVICIAN NEWS, no. 5, p.5-7).

Membership of Ordovician Chronostratigraphy Working Groups

(see list of members in ORDOVICIAN NEWS No. 5, pp.7-8.

3. Subcommittee Newsletter

The fifth issue of ORDOVICIAN NEWS was printed and circulated in October-November 1987. This issue was some 36 pages long, and was distributed to well in excess of 500 specialists and institutions. A number slightly more than 60 copies remain available for later distribution on request. The Secretary of the Subcommittee continues to act as Compiler and Editor.

4. IUGS Cambrian-Ordovician Boundary Working Group

A full report of this Working Group will no doubt be provided by the Chairman, Dr. Brian Norford. It has been a very active group since the Calgary meeting in July 1985, and it is pleasing to note that the series of papers read at the Calgary meeting are now being edited by B. S. Norford and B. D. Webby for inclusion in a special issue of the Geological Magazine, probably to appear in May 1988.

5. Membership Matters

The Chairman (C. R. Barnes) and Secretary (B. D. Webby) support the proposal of Professor Lu Yanhao (dated 14 January 1987), President of the Palaeontological Society of China, that the following be elected the three Chinese titular members

of the Ordovician Subcommittee: Prof. Lu Yanhao and Dr. Chen Xu, Nanjing Institute of Geology & Palaeontology, Academia Sinica, and Dr. Wang Xiaofeng, Yichang Institute of Geology & Mineral Resources, Ministry of Geology & Mineral Resources of China. Drs Chen and Wang are both graptolite specialists and would be new appointments replacing Professor Kuo Hungchun and Dr. Sheng Hsinfu.

In the nomination of Dr. M. Robardet (letter dated 23 September 1987) a new corresponding member of the Ordovician Subcommittee is recommended to represent Spain. His name is Dr. Juan-Carlos Guitierrez-Marco of Madrid University and he is a graptolite specialist. Again the Chairman and Secretary support this nomination for election.

6. V International Symposium on the Ordovician System, St. John's, Newfoundland, August 1988

Details of this International Symposium on the Ordovician System have been circulated in the First Circular (enclosed). Consequently 1988 is expected to be a very active year for the Subcommittee. It is hoped that it will be fully supported by IUGS and the Commission of Stratigraphy.

25 November 1987

B. 1988 (modified version of Annual Report for 1988)

1. IUGS Subcommittee on Ordovician Stratigraphy

2. Overall objectives:

- (a) Aims to standardize internal boundaries of the Ordovician System on a global basis (including the setting of international boundary stratotypes). As a preliminary we are preparing regional correlation charts with explanatory notes and have regional chronostratigraphic appraisal of existing subdivisions and applications.
- (b) To promote the development and applications of stratigraphic methods of all kinds for use in Ordovician correlation, and to clarify principles of stratigraphic procedure in order to establish a unified global Ordovician time scale.

3. Relationships to IUGS:

These objectives fit entirely within the framework of stated goals of the IUGS Science Policy, to encourage and promote the study of geological problems requiring international and interdisciplinary cooperation. Our work requires cooperation from many specialists worldwide, and using all possible stratigraphic methods (physical, chemical and biological) to establish a unified Ordovician time scale; and to promulgate the results of this work at International Geological Congresses, and at other IUGS sponsored international meetings.

4. Organization and Officers:

The Subcommittee is a body of the Commission of Stratigraphy; it was established in 1974. The present Chairman is C. R. Barnes, the Vice Chairman I. F. Nikitin, and the Secretary, B. D. Webby. All three were elected at the IGC in Moscow in 1984. There are currently 18 voting members and 52 corresponding members. A number of regional chronostratigraphy working groups were established

in 1983, for Britain, Baltoscandia, N. America, China, Soviet Union and Australasia. Ordovician correlation charts and explanatory notes have been published regularly in a series of IUGS publications since 1980, and the newsletter, ORDOVICIAN NEWS has been produced regularly since 1983.

5. Nature of Support

The subcommittee has wide regional and global support from Ordovician stratigraphers, palaeontologists, palaeomagnetists and geochronologists.

6. Interface with other global projects

The Subcommittee strongly supports (or has supported) the activities of the IUGS Cambrian/Ordovician, and Ordovician/Silurian boundary working groups, which have (or had) as primary aims, to standardize the boundaries at the bottom and top of the System. The former has now made substantial progress towards achieving its goal, and the latter has been disbanded now that the international boundary stratotype has been selected at Dobs Linn, Scotland. Links are also maintained with IGCP project 216 on global bioevents.

7. Accomplishments:

Fifth International Symposium on the Ordovician System was held in St. John's, Newfoundland, Canada, from August 8-12, 1988, with accompanying major field excursions. For a full report of these achievements see Appendix (attached), and/or see Episodes vol. 11, No. 3, p.231 (Sept. 1988).

8. Problems

The sixth issue of ORDOVICIAN News has been delayed because of the heavy workload of current editor, B. D. Webby (also Subcommittee Secretary and writer of this report). It will be produced in the early part of 1989.

9. Publications:

A second Soviet Ordovician correlation chart was published in July 1988, as IUGS Publication, No. 26. It was entitled 'The Ordovician System in most of Russian Asia: correlation charts and explanatory notes', and includes a treatment of regions such as the Siberian Platform, Taimyr, western Altai Sayan and NE to far eastern USSR.

10. Work Plan:

- (a) Publication of the next issue of ORDOVICIAN NEWS early in 1989.
- (b) Publication of at least one further Ordovician correlation chart - Greenland, probably the third (and last) Soviet chart and the Central European chart - in the IUGS publication series.
- (c) 28th International Geological Congress, Washington D.C., in early July 1989. To hold discussion and business meetings of the Subcommittee; and to arrange for displays showing our correlation chart series and status of current work on Ordovician chronostratigraphy.
- (d) It was proposed in the report of the Fifth International Symposium on the Ordovician System (see separate report by Chris Barnes following membership list, p. 6) that we now focus future work on zonal levels where there is

excellent correlation potential (many tie points), and as close as possible to the bases of the various Ordovician Series boundaries, the Arenig, Llanvirn, Caradoc and Ashgill. Discussions of this approach will be further developed at the Subcommittee meetings in Washington next July, and it is likely that the various titular members will be asked to head informal working groups to focus attention on these stratigraphic levels.

11. Subcommittee membership:

At the Commission of Stratigraphy meetings to be held at the IGC in Washington in July 1989, we hope to have ratification of our proposals for membership changes - that is, those outlined in our Annual Report of 1987, and those indicated below, which were first proposed at the Newfoundland meeting (August 1988). At the Subcommittee meeting in Newfoundland in August the following titular members were nominated:

R. A. Fortey (UK)
A. V. Kanygin (USSR)
S. H. Williams (Canada)
F. Paris (France)

H. B. Whittington (UK) and M. J. Destombes (Morocco) have indicated their intention to retire. This will result in an overall increase in titular members from 18 to 20).

As new corresponding members we propose:

O. Fatka (Czechoslovakia, acritarchs)
J. Kirschvink (U.S.A., palaeomagnetism)
Chen Junyuan (China, cephalopods)
M. Bjerreskov (Denmark, graptolites)

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REPORT ON THE FIFTH INTERNATIONAL SYMPOSIUM ON THE
ORDOVICIAN SYSTEM, ST. JOHN'S, NEWFOUNDLAND, CANADA, AUGUST 8-12, 1988

Under the sponsorship of the Commission of Stratigraphy and the Subcommittee on Ordovician Stratigraphy, a fifth international symposium on the Ordovician System was held in St. John's in early August. This highly successful meeting was attended by over 130 Ordovician specialists, which in addition to the formal sessions and workshops included two, week-long field excursions - the pre-session, focusing on the platform and slope carbonate facies and faunas of western Newfoundland, and the post-session, on a transect across the Iapetus Ocean from its continental margins. Most informative guide books were produced, adapted from earlier guides, and edited by S. Henry Williams. The excellent weather contributed to the success of these excursions aimed at displaying some of the most spectacular Ordovician geology on the island of Newfoundland.

Over 120 papers were offered from specialists from more than a dozen different countries on a wide spectrum of themes. The first day of the meeting ran as a single session, tackling global aspects of chronostratigraphy, paleoceanography, geochronology, magnetostratigraphy, and geochemistry. Two other days were devoted to parallel sessions covering regional stratigraphy and tectonics, paleontology, and hydrocarbon resources. Five separate workshops enabled debate on current issues of chronostratigraphy, the Cambrian-Ordovician Boundary, and global bioevents. On the third day of the St. John's conference participants were able to hold informal discussion during a local field trip to examine the Proterozoic through Lower Ordovician sequence near St. John's bearing special emphasis on the Lower Ordovician clastics with exceptional trace fossils on Bell Island, Conception Bay.

Following the last international meeting in 1982 in Oslo, the Subcommittee on Ordovician Stratigraphy established several regional chronostratigraphy working groups. Through their formal reports at the conference and in workshop discussion, it was agreed to focus future work on several zonal levels that represent significant bioevents and/or excellent correlation potential. Some of these levels are considered appropriate for the definition of a revised series classification for the System. The base of the System will be recommended by the Cambrian-Ordovician Boundary Working Group (see below), possibly the Cordylodus lindstromi conodont Zone redefining the base of the Tremadoc (and Ibexian) Series. The level of the base of the Tetraraptus approximatus graptolite Zone is close to the base of the Paroistodus proteus conodont Zone, marking a level of significant graptolite evolution (bithecal development) that has been traditionally accepted as the base of the Arenig Series. Important zonal levels within the interval of the Arenig Series include Oepikodus communis conodont Zone with, slightly higher the Orthidiella brachiopod Zone and the Tripodus laevis conodont Zone marking the base of the Whiterock Series. Arguments were advanced to recognize a significant level just below the traditional base of the Llanvirn Series at the level of the Undulograptus austrodentatus graptolite Zone (initiation of biserial graptolites), which is close to the base of the Eoplacognathus? variabilis conodont Zone. For many decades one of the most widely correlatable horizons has been the base of the Nemagraptus gracilis graptolite Zone (close to the base of the Pygodus anserinus conodont Zone) which lies within the Llandeilo Series. Slightly higher, near the base of the Caradoc Series are the useful zonal levels of the Diplograptus multidentatus graptolite Zone and the Prioniodus gerdae conodont Zone. The important glacial events near the end of the Ordovician lie principally within the Ashgill Series; increasing faunal provincialism reduces effective correlation but the zonal levels of the Climacograptus complanatus graptolite Zone and the Amorphognathus ordovicicus conodont Zone are possible candidates to define the base of a terminal series for the System. These comments do not imply that the historical British Series will necessarily be those finally recommended.

The Subcommittee on Ordovician Stratigraphy, in collaboration with other specialists, will now consider these proposals for potential Series revision with potential biohorizons and magnetostratigraphic events for their definition and correlation. Final draft decisions will be debated at the next International Symposium on the Ordovician System prior to submission and ratification by the Commission on Stratigraphy. Registrants at the meeting favoured that the next meeting be held in Australia within three to five years.

One sponsor of the VISOS meeting was IGCP Project 216 (Global Bioevents). Professor Otto Walliser (University of Göttingen) presented an overview address and a workshop and several formal papers addressed Ordovician bioevents, particularly the basal Ordovician radiation event and the terminal Ordovician extinction event.

Another workshop proved to be the most controversial: the Cambrian-Ordovician boundary. The Boundary Working Group arranged a special issue of the Geological Magazine (July 1988) devoted to this topic. After fourteen years of investigation the Group has condensed the selection of a boundary stratotype to two sections: in Western Newfoundland and near Dayangcha, northeast China, at a level defined on conodonts just below the first appearance of nematophorous graptolites. After debating the latest data, straw poles were taken of both members of the Working Group and of the workshop attendees as a whole. Both sets of votes resulted in the following preferences a) that the boundary stratotype be selected from the two final candidates; b) that Green Point, Newfoundland was favoured over Dayangcha, China; c) that the boundary level of the base of Cordylodus lindstromi conodont Zone be favoured over the C. intermedius (no support) and C. proavus zones. A strong final recommendation of the workshop was that the Working Group arrange for a final mail ballot within the near future to arrive at a recommendation to the Commission on Stratigraphy.

The success of the meeting was partly due to the general financial support provided by the Natural Sciences and Engineering Research Council, the Geological Survey of Canada, Memorial University of Newfoundland, the Newfoundland Department of Mines, and IGCP 216. Meeting arrangements were made by an Organizing Committee chaired by Chris Barnes (Geological Survey of Canada) and locally chaired by Henry Williams (Memorial University of Newfoundland). This brief report cannot detail all the many outstanding formal papers but a selection of these will be published as a Geological Survey of Canada Paper to be edited by Barnes and Williams. Further details on the Symposium and subsequent activities will be reported in the next issue of ORDOVICIAN NEWS to be produced by Barry Webby.

C. R. Barnes
Chairman, SOS

ANNOUNCEMENT

It is very tentatively proposed, following the favourable responses at the St. John's meeting, to hold the Sixth International Symposium on the Ordovician System in Sydney, Australia, during the week of 14-19 July 1991. A warm invitation is extended to all Ordovician workers to attend. Please advise Barry Webby if there are any problems with these dates, or other clashes are known. Further details of pre- and post-session excursions in Australia and neighbouring regions, organisation, committees, etc., will follow.

ROUSSEAU FLOWER - IN MEMORIAM

It is with deep regret we record the death of Rousseau Flower, in Socorro, New Mexico, on February 27, 1988 in his 74th year. He was a major contributor to the knowledge of Ordovician studies through his long-standing and distinguished work on nautiloids, and his interests in Ordovician corals and stratigraphic relationships across North America. He was a complex, generous and gifted person, totally dedicated to his palaeontological work, but also with wide interests in music and literature. There was a fund of entertaining Flower stories, and he enjoyed donning Texas hat, western attire, cowboy boots and bullwhip for some geological field meetings - he was a great character and will always be missed at future meetings. A bibliography and other memorial tributes are contained in Wolberg 1988a (New Mexico Bur. Mines & Min. Resourc. Mem., 44, v-xiv); see also Wolberg 1988b (J. Paleont., 62, 658-659).

28th INTERNATIONAL GEOLOGICAL CONGRESS, WASHINGTON D.C.
9-19 July, 1989

1. In addition to scheduled meetings of the IUGS Commission of Stratigraphy which hopefully will ratify our nominations for new titular and corresponding members (see Annual Reports for 1987 and 1988), there will be meetings of the Ordovician Subcommittee to review progress, and to establish a set of firm guide lines to focus attention at stratigraphic levels near the bases of the various Ordovician Series (Arenig, Llanvirn, Caradoc and Ashgill). Also, hopefully, there will be final meetings of the IUGS Cambrian-Ordovician Boundary Working Group, with resolution of the various points of conflict and decision on location and level of the stratotype for the base of the Ordovician System (coincidentally also the base of the Tremadoc Series).
2. The Ordovician Subcommittee will display its Correlation Chart Series of publications and the status of its work in the Commission of Stratigraphy chronostratigraphy exhibit area at the IGC.
3. The IGC Symposia listed in the Second Circular, of relevance to Ordovician workers, are much the same as those listed previously in ORDOVICIAN NEWS, No. 5, p.17. However, the title of Symposium B7 has been changed. It is now listed as 'Stromatolite diversity through time'. A poster session entitled 'Palaeogeographic and paleoenvironmental reconstructions of Paleozoic ocean basins and the construction of Pangea' (P35), a short course on 'Metazoan biomineralization: patterns, processes and evolutionary trends' (S21B), and workshops on 'Extinctions in the geologic record' (W11B), and 'Quantitative stratigraphy' (W19B) maybe of interest to Ordovician specialists.
4. Field Trips. Unfortunately of the four field trips listed in ORDOVICIAN NEWS No. 5, only two remain available to participants - T125, on the Cambrian-Early Ordovician of the Basin and Range Province of Nevada and Utah (M. E. Taylor, H. E. Cook, J. F. Miller, A. R. Palmer,

M. Rees and R. A. Robison, leaders) and T161 on the Cambrian-Ordovician carbonate banks and siliciclastic basins of the Appalachians (K. R. Walker, J. F. Read and L. A. Hardie, leaders). There is also a relevant one-day field trip listed - T221 on the Early Paleozoic continental shelf to basin transition, northern Virginia, to be led by E. K. Rader, J. F. Read, D. Patchen and L. Avery.

In addition, I understand from Reuben Ross and Rick Diecchio that they are both willing to organize unofficial Ordovician field trips to their respective areas of interest (the Great Basin, and the Appalachians) if sufficient numbers of Ordovician specialists are interested. Dr. Diecchio advises that he could arrange a one-day visit to the Strasburg section (Middle to Upper Ordovician) in northern Virginia during the meeting, or a two-day trip to visit a number of Middle-Upper Ordovician sections between Strasburg, Virginia and Franklin, West Virginia before or during the meeting. Cost of the first would be minimal (much less than \$100) and for the second, around \$200.

Please contact directly Drs Reuben Ross (5255 Ridge Trail, Littleton, Colorado, U.S.A. 80123) and/or Rick Diecchio (Dept of Geology, George Mason University, Fairfax, Virginia, U.S.A. 22030) immediately if you are interested in taking part in one or other of these suggested field trips.

OTHER RELEVANT MEETINGS - PAST & PROJECTED

1. Friends of the Ordovician meeting - held at Radisson Hotel, Denver, Colorado, 6 p.m., November 1, 1988 (associated with the 100th annual meeting of the Geological Society of America. As reported by R. J. Ross Jr (chairman of the meeting), this informal meeting was attended by 31 persons, and they each reviewed their current work on the Ordovician. Chris Barnes (Chairman, Subcommittee of Ordovician Stratigraphy) also attended, and presented a review of the proceedings of the Fifth Symposium on the Ordovician System held in St. John's, Newfoundland, in August 1988. A list of those present is as follows (addresses included only if not previously recorded in ORDOVICIAN NEWS):
L. Alberstadt, A. Lenz, R. A. Davis (Cincinnati Museum of Natural History, Ohio), R. Johns (Dept of Geol. Sci., Univ. of Texas, Austin, TX 78713), R. B. Neuman, S. Pöhler (Geological Survey of Canada, Vancouver), R. B. Blodgett (U.S. Geol. Survey, Reston, Virginia), E. A. Measures, J. K. Rigby, N. Eberz (San Jose State Univ., Calif. 95192), J. Sprinkle, T. Dutro, J. D. Loch (Univ. Missouri, Columbia, MO 65211), D. H. Zenger (Pomona College, Claremont, CA 91711), L. Stanton (Dept of Geology, Univ. of Wisconsin, Milwaukee), P. Sheehan, A. Rindsberg (Geol. Survey Alabama, P.O. Box 0, Tuscaloosa, Alabama), S. Holland, P. Sheldon (Dept of Geology, University College, P.O. Box 78, Cardiff, Wales, U.K.), L. Hintze, S. Pollock (Dept Geosciences, Univ. of Southern Maine, Gorham, Maine 04038), J. F. Miller, J. R. P. Ross, F. Lobdell, R. Sloan, M. Foote and M. Patzkowsky (Dept Geophysical Sci., Univ. of Chicago, Illinois 60637), R. Elias, C. A. Ross (Chevron USA, Box 1635, Houston, TX 77251) and D. Brandt.
2. The Murchison Symposium - an International Symposium on the Silurian System To be held at the University of Keele, U.K. from 28 March - 9 April 1989. Preparations for this major international meeting are now well advanced.

Field excursions to the Silurian of the Welsh Borderland and Wales, and to Murchison's historical sections may be included.

Contact M. G. Bassett, Dept of Geology, National Museum of Wales, Cardiff CF1 3NP, U.K., for further details.

Two meetings of the Subcommittee on Silurian Stratigraphy will be held during the Murchison Symposium: firstly to review work of the Subcommittee since the last meeting held in Australia in 1986, and other matters of business; and secondly to discuss the state of Silurian global correction charts, and the IGCP project 216 Bioevents (specifically the Wenlock-Ludlow boundary event).

3. Third International Symposium on the Cambrian System to be held in Novosibirsk (Inst. of Geology & Geophysics of the Siberian Branch of the Acad. Sci. USSR) at the end of July to early August of 1990.

Two definite field excursions are planned - (1) a pre-session trip to Lena and Aldan River (Yakutia) sections to study Lower Cambrian stage divisions and lower boundary of the Cambrian in the USSR; and (2) a post-session trip to Maly Karatau (Kazakhstan) to view the key sections for the Middle and Upper Cambrian stages. Also possibly a field trip to the Ukraine may be added, to see key Vendian sections.

Contact person, Dr. L. N. Repina, 630090, Novosibirsk-90, Inst. of Geology & Geophysics, SB of USSR Acad. of Sciences, USSR.

4. Second International Brachiopod Congress, 5-9 February 1990, Dunedin, New Zealand.

Contact J. D. Campbell and D. E. Lee, Geology Dept, University of Otago, P.O. Box 56, Dunedin, New Zealand, for further details.

CAMBRIAN-ORDOVICIAN BOUNDARY WORKING GROUP

Circular No. 24 of the International Working Group on the Cambrian-Ordovician Boundary contains a wealth of information and was distributed in June 1988. It included the following:

1. Report on the Working Group meeting to Dayangcha section, Jilin, China (July 24-26, 1986) and report on conodonts from the Dayangcha section (see Appendices I-II).
2. Proposed Working Group meeting in Newfoundland, Canada (August 1988).
3. New data from the Batyrbay section in Kazakhstan, USSR (Appendix III).
4. Recent Cambrian-Ordovician research in central Australia (Appendix IV).
5. Special issue of the Geological Magazine on the Cambrian-Ordovician Boundary - this 140 page issue, edited by B. S. Norford and B. D. Webby, has now been published in volume 125, part 4 (July 1988).
6. Field trip Announcement emphasizes the importance and relevance of the Cambrian-Early Ordovician Basin & Range Province field trip to Nevada & Utah being organised by M. Taylor and others as official pre-session field trip T125 of the IGC in Washington in July 1989.

7. New membership list.

8. Recent publication list.

9. Members articles - a. Progress in the Lower Ordovician of Latin America by F. G. Aceñolaza (pp.5-8); b. The Cambrian-Ordovician boundary and the problem of the base of the Tremadoc by M. K. Appollonov (pp.9-15); c. Strontium analysis of biogenic apatite near the Cambrian-Ordovician Boundary by J. Kovach and J. Miller (pp.16-18); d. Which conodont zone boundary should we use for defining the base of the Ordovician System? by J. F. Miller (pp.19-23).

10. Chairman's comments - by B. S. Norford.

Appendix I: Visit by Working Group on Cambrian-Ordovician Boundary to Jilin Province, China, Late July 1986, by B. S. Norford (edit. J. F. Miller), 12pp., 7 figs.

Appendix II: Conodonts from the Dayangcha section, Jilin Province, China, by J. Miller, D. Kennedy and J. Repetski, 4 pp., 2 figs.

Appendix III: The potential Cambrian-Ordovician boundary stratotype in Kazakhstan, U.S.S.R., revisited, by M. E. Taylor and H. E. Cook, 3 pp.

Appendix IV: Recent Cambrian-Ordovician research in Central Australia, by J. H. Shergold and R. S. Nicoll, 2pp. 1 fig.

11. Postal Ballot Circular 24 also included a ballot paper on which all members were asked to indicate whether they wished the Executive of the Working Group to organize a formal postal vote during 1988 on the selection of a global boundary and stratotype section.

Cambrian-Ordovician boundary meeting, St. John's, 10 August 1988

This meeting chaired by J. Miller (Secretary), in the absence of the Chairman (B. Norford), and by B. D. Webby for a period of discussion of the Dayangcha and Green Point sections actively involving J. Miller, was somewhat controversial and limited in positive outcomes. The postal ballot referred to above was inconclusive, with equal numbers for and against a formal vote on the two candidate sections (Dayangcha and Green Point). Chen Junyuan and C. Barnes presented up-dated accounts of their respective Dayangcha and Green Point sections and there was much discussion of the merits and demerits of the respective sections. Some members attending the meeting felt there was a need to reopen discussion of other sections such as those in Kazakhstan, Wales, Norway and Utah. After considerable debate straw poles of Working Group members and attendees as a whole were taken. However, there was preference for selection only from the two final candidates, with Green Point being preferred over Dayangcha (but then had the meeting been held in China, the voting would probably have been reversed, with Dayangcha favoured). The boundary at the base of the Cordylodus lindstromi Zone was preferred to other proposed levels. There was a strong feeling that a final recommendation should be made soon by postal ballot of members of the Working Group for consideration of the Commission of Stratigraphy.

A copy of the relevant part of a proposed time scale for presentation at the meeting of the Commission on Stratigraphy during the 28th IGC in Washington D.C. in July 1989 is enclosed for comment and discussion. Written comments should be forwarded to the Chairman, N. J. Snelling, Universidad Complutense de Madrid, Facultad de Ciencias Geologicas, Dpto de Petrologia y Geoquimica, Ciudad Universitaria, 28040 Madrid, Spain.

Comment: Perhaps in the light of our recent chronostratigraphic discussions in St. John's, and the suggestion that the series name Llandeilo may be abandoned, as a first step, the interval from Llanvirn to Llandeilo should be unified as a Llanvirn-Llandeilo Epoch.

PERIOD	EPOCH	AGE	Ma.
DEVONIAN	LATE	Fasnian Frasnian	375
	MIDDLE	Givetian Eifelian	390
	EARLY	Essian Siegenian Gedinian	410 (412)
SILURIAN	PRIDOLI LUDLOW		424
	WENLOCK		428
	LLANDOVERY		438 (433)
ORDOVICIAN	ASHGILL		446
	CARADOC		455
	LLANDEILO		460
	LLANVIRN		470
	ARENIG		490
	TREMADOC		510 (509)
			530
CAMBRIAN		Atdebanian	550
		Tomotian	570

Figs 1A and 1B. The geologic time scale, Cambrian to Triassic. N.B. The numbers in brackets are the ages proposed by Kulp in 1961 (see text). They have been adjusted to take into account the adoption, in 1976, of conventional decay constants. Ages to beginning of chronostratigraphic unit.

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CURRENT RESEARCH AND PUBLICATIONS OF ORDOVICIAN SPECIALISTS
(additional to those reported in earlier issues of ORDOVICIAN NEWS)

BRITISH ISLES

Simon Tull (Univ. of Nottingham) reports as follows:

Project: CONODONT MICROPALAEONTOLOGY OF THE MORRIS BUGT GROUP
(MIDDLE ORDOVICIAN-LOWER SILURIAN) OF NORTH GREENLAND

Ph.D. studentship, funded by The Natural Environment Research Council and undertaken at the Department of Geology, University of Nottingham, supervised by Dick Aldridge.

The project is taxonomically based. A multielement appraisal of conodont faunas from sections collected across the North Greenland carbonate platform reveals over sixty distinct species, several of which are new. Faunas are dominated by species with coniform apparatuses which characterize, and were restricted to, the north American craton. In addition, other forms that inhabited deeper water bordering the craton occur in smaller numbers. It is therefore possible to correlate directly with the North American type sequences.

The base of the Morris Bugt Group is marked by a change from intertidal dolomites to subtidal limestones. Conodonts indicate a P. sweeti chronozone age, suggesting the facies change may be linked to a major, world-wide transgression in the Llandeilo. The group spans the Mohawkian and Cincinnati Series, and contains the Ordovician-Silurian systemic boundary. Cincinnati faunas are often of high diversity and show strong similarities to those of the Western Midcontinent of the United States and the Canadian Arctic. The Ordovician-Silurian systemic boundary is marked by a major turnover in conodont faunas. Typical Ordovician faunas are replaced by very low abundance, low diversity Silurian faunas. In the sections studied, only two genera survived this event.

Plotting and contouring of conodont Colour Alteration Index (CAI) values shows two clear trends, with values increasing along depositional strike from west to east, and across it from north to south. These trends are largely related to depth of burial. Locally, for instance in the Caledonian Foreland of eastern North Greenland, tectonics may have had some affect. Levels of organic metamorphism indicated by CAI data are confirmed by similar published studies on acritarchs. Integration of geothermal data based on conodonts and acritarchs will form the basis of an assessment of the burial history and hydrocarbon potential of North Greenland.

Biostratigraphic and geothermometric results of this study are to be incorporated into Project NordGron of the Greenland Geological Survey, a major mapping, stratigraphic and structural study of North Greenland.

CZECHOSLOVAKIA

Michal Mergl (Plzn) lists his current research and publications as:

1. study of rocky-bottom fauna from Tremadoc-Arenig of Bohemia
 2. taxonomy and distribution of inarticulate brachiopods during Tremadoc-Llanvirn interval in Bohemia
 3. taxonomy, composition and distribution of Foliomena Fauna and related deep-water brachiopod communities in Bohemia.
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